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TruMan Trauma

User Manual
Version 1:4

Contents	Page
<u>Introduction</u>	
Introducing the Truman Trauma	3
<u>Quick Set up guide</u>	
Preparing the TruMan Trauma for use	5
Tension pneumothorax	5
Needle Decompression replacement tissues	6
Chest Drain replacement tissues	9
Cricothyroidotomy and tracheostomy	12
<u>Airway management</u>	15
<u>Care and maintenance</u>	
Cleaning and Storage	16
<u>Warranty</u>	17

Introduction

Introducing the TruMan Trauma

The TruCorp mission is to improve patient safety by offering anatomically accurate task trainers for training medical professionals.

As our product line of medical task trainers expands from airway management to surgical simulation, we are focused on the priorities of providing value, durability, and product support. At TruCorp we pride ourselves on providing high quality products with high quality, affordable consumables and low running costs.

With these core principles in mind, TruCorp has designed the Truman Trauma System for teaching medical professionals the necessary skills for dealing with a range of life threatening trauma situations.

The Truman Trauma System offers an anatomically correct simulated human torso designed for trainees to practice several surgical procedures together with the renowned AirSim head for training the full range of airway management and resuscitation skills.

The model was designed with the trainee in mind, the replaceable neck skin, larynx membrane inserts, reusable larynx, chest drain inserts and needle decompression inserts help provide a realistic and unique learning experience.

Skill Development:

1. Chest tube insertion: recognition of correct position, surgical incision, blunt dissection through chest wall, perforation of pleura, and finger sweep
2. Needle Decompression of tension pneumothorax
3. Cardio Pulmonary Resuscitation (CPR)
4. Needle and Surgical Cricothyroidotomy
5. Airway Management Skills including OP and NP airway tube insertion, tracheal intubation, bag valve mask techniques, supraglottic airway insertion and ventilation
6. Percutaneous Tracheostomy
7. Identification of tracheal deviation and jugular vein distension which are warning signs attributed to tension pneumothorax

Features:

Chest Tube Insertion:

1. Anatomically accurate chest tube insertion in the 5th/6th/7th intercostal space at the mid auxiliary line.

2. Optional economy or premium chest tube inserts to demonstrate incision. The economy option consists of one solid layer and is a low cost solution for training e.g. for use in ATLS courses. The premium product has a three layered tissue representing skin, fat tissue and muscle for “real feel” surgical incision.
3. Realistic feel of all thoracic palpable landmarks
4. Cavity for introduction of optional liquids for simulation of haemothorax or pleural effusion

Needle Decompression:

1. Option to introduce air to create either right or left tension pneumothorax
2. Needle decompression replacement tissue sets located in the 2nd intercostal space at mid clavicular line
3. Successful needle insertion will release air with the familiar “hiss” sound

Cardio Pulmonary Resuscitation:

1. Realistic chest structure allows for easy identification of all anatomical landmarks
2. Full head tilt, chin lift and jaw thrust capabilities to allow the students to prepare the airway prior to resuscitation
3. Lifelike recoil during compressions
4. Successful ventilation will provide an accurate representation of chest rise and fall

Airway Management Skills:

1. Anatomically accurate oral and naso pharyngeal AirSim airway
2. Larynx piece with palpable rings for both surgical and needle Cricothyroidotomy and percutaneous tracheostomy
3. Larynx membrane inserts which resemble the cricoid membranes and tracheal cartilages
4. Full use of supraglottic devices
5. Endo-tracheal tube insertion with direct laryngoscopy
6. Effective bag mask ventilation
7. Single lung isolation capabilities

Tracheal deviation and jugular vein distension:

1. Jugular vein distension can be observed on either the left or right side of the neck during tension pneumothorax

2. Tracheal deviation can be palpitated and clearly visible moving away from the side that has tension pneumothorax
3. Both features revert back to neutral upon successful needle decompression

Product Components:

1. Truman Trauma model ([TTR2000](#))
2. Complete set of replaceable Chest drain inserts ([CD3000](#)) **3 layered insert or (CD3001)1 layered insert** and Needle decompression ([ND2000](#)) tissues
3. 1 Trauma larynx piece ([TL200](#))
4. Larynx Membrane Inserts (pack of 30) ([LMS2050](#))
5. 1 overlay neck skin attached on the model and 2 spare ([RS1005](#))
6. 1 set of airway sealing tape ([ST1000](#))
7. 1 bottle of TruCorp lubrication ([TL100](#))
8. User's Guide/Instructor's Guide
9. Black Carrying Case ([ABAG01](#))

Quick Setup Guide

Preparing the TruMan Trauma for use

1. Remove the Truman Trauma model from the black carry case
2. Ensure that all components are present and the tissue sets are connected and secure.
3. Place the model down on its back into the supine position
4. Check the tongue is inflated with approximately 20ml of air. This will create normal lingual tension. Increasing the amount of air will create a more difficult airway management scenario.
5. Using TruCorp's silicone lubricant ensure that the internal airway including the tongue, hard palate, back of the mouth and epiglottis is well lubricated. If appropriate ensure that the nasal passage is lubricated.
6. Please ensure all airway devices are prepared to the manufacturers recommendations and instructions. Before insertion of any device, generous amounts of lubricant should be used to cover the surfaces in contact with the airway.

Tension pneumothorax

1. The Truman Trauma model is designed to ensure a realistic experience but with simplicity to ensure time efficient set up and operation.
2. Tension pneumothorax can only be created on one side at a given time (either left or right), due to the tracheal deviation feature.
3. The base is clearly labeled to allow quick introduction of air through a regular

resuscitation bag into the left or right lung. The luer connector is positioned directly under the label stating which side the tension is on for e.g. left tension pneumothorax. The number of lung bag inflations required is dependent on the level of severity you want to create. The more inflations the greater the tension pneumothorax. PLEASE NOTE: it is recommended no more pumps are needed when the trachea has deviated to its maximum point and the jugular veins have swollen to the maximum point.

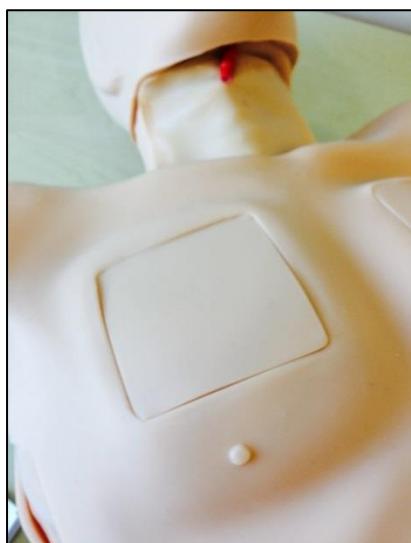
4. Upon bag inflation tracheal deviation will be visible and palpable.
5. Jugular vein distension will also occur, this will be visible and palpable.
6. The needle decompression inserts will also have filled with air, tension pneumothorax has been created and the model is now ready for use.
7. Upon successful needle decompression the air will 'hiss' out and the trachea deviation will revert back to resting/neutral position. The Jugular vein distension will also revert back to a normal state.
8. At this stage step 3 can be repeated until the needle decompression tissue set has failed.
9. Both thoracic sides are operational giving a different viewpoint on each procedure.

Needle Decompression replacement tissues

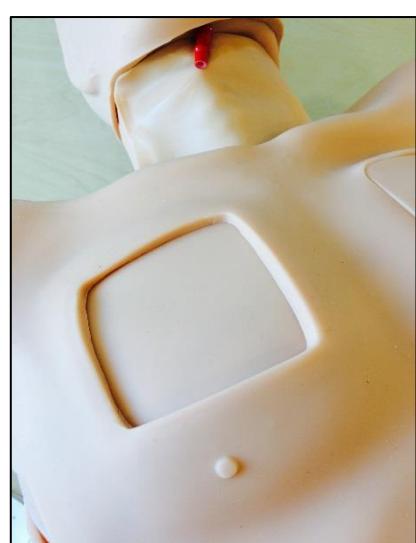
The Needle decompression replacement tissues are made for multiple uses giving greater economic savings. The familiar 'hiss' sound can be heard upon a successful procedure. The Truman Trauma model will come ready for use, prepared with both needle decompression replacement tissues in place.

1. After exhausting the needle decompression tissue the next step is to replace the tissue sets with a new set.

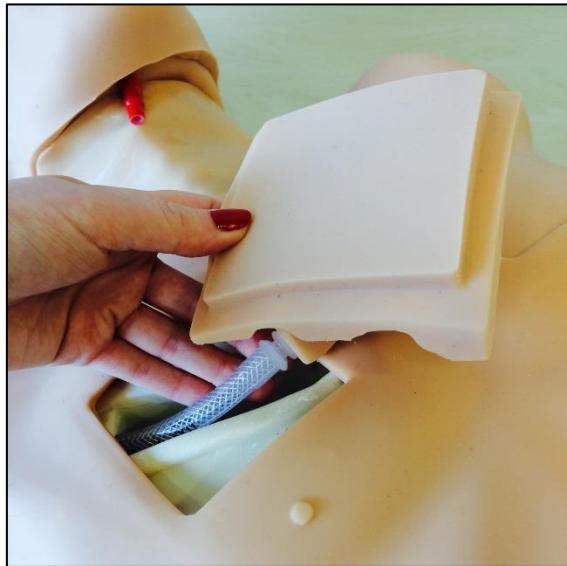
Remove the outer chest skin to gain access to the needle decompression insert site



Tuck the chest skin
out from the insert



- Gently remove the insert away from the slotted rib structure
- This will reveal the internal tubing, the end valve being can be pulled out for ease of use



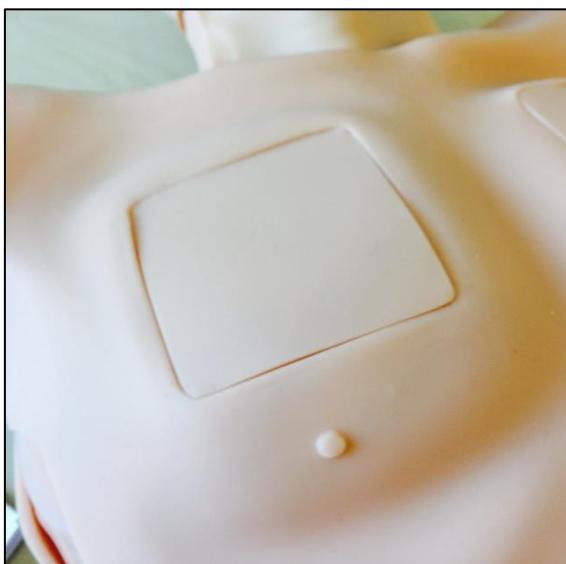
- Slowly separate the tubing from the needle decompression insert and this will free the insert.
- Dispose of the insert safely



- Handle a new tissue set, inserts are labelled L for left and R for right for easy separation. Align the tubing with the end valve into the location hole, ensure the valve is inserted down to the last thread.



- Reinsert the tissue set into the slotted rib structure, a small amount of lubrication can be added to reduce the friction upon entry. The tubing can be pushed back inside the model to place in the correct position.
- Make sure the tissue set is flush with the outer skin and is positioned correctly in relation to the ribs.



- Take time to ensure the tissue inserts are inserted correctly as a faulty connection will affect the operation of the feature.
 - Re assemble the chest skin and tuck this back into the position so that the chest skin sits parallel to the needle insert.
2. The new tissue set will now be ready for use.
 3. The tissue set can be used for multiple uses and efficiency can be improved through the use of a smaller gauge needle.
 4. Failure of the needle decompression insert will be evident when the air tightness of the model begins to decrease and there is a lack of 'hiss'. The insert should successfully endure more than 50 needle incisions. To ensure optimal performance we suggest regular inspections are carried out.

TruCorp provide the following consumable to facilitate pneumothorax education on the Truman Trauma. This can be ordered using the below code;

- **ND2000 Needle Decompression Inserts- set of two**

Chest drain replacement tissues

There are two options for the chest drain replacement tissues; economy CD3001 or premium CD3000

The economy option consists of one solid layer of special silicone blend, it is a low cost solution for training e.g. for use in ATLS courses.

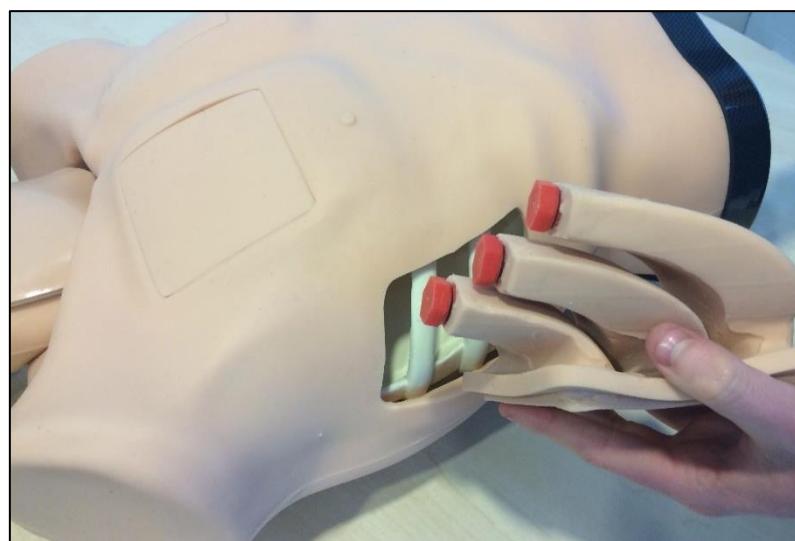
The premium product provides a three layered tissue representing; skin, fat tissue and muscle. Each of these layers are pigmented to the applicable colour anatomically and provide a realistic feel and touch.

The insert position, which is between the ribs allows for realistic palpations of the correct intercostal landmarks, chest tube insertion can be carried out in the 5th/6th/7th intercostal space. The inserts provide the option of inserting fluid (TruCorp do not provide the fluid) to the cavity, simulating the experience of breaking into the pleural cavity with a gush of fluid released. (TruCorp recommend that water is used so that no staining of the model is incurred with blood like substances). The chest drain insert has been designed so that the tube can be sutured in place. Each intercostal landmark can be used once or twice depending on the size of the incision performed.

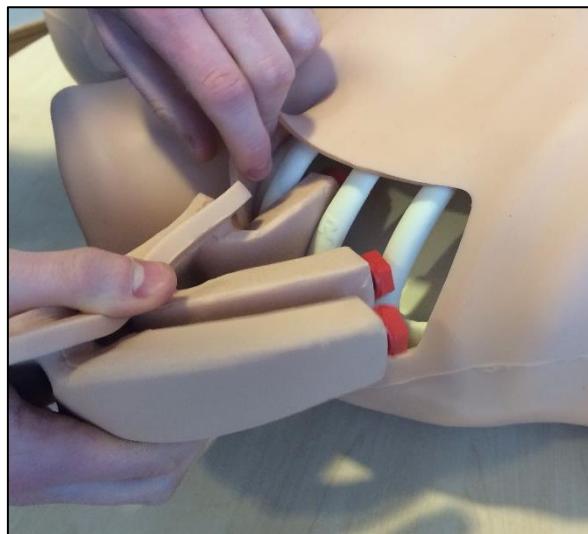
1. To replace the Chest drain replacement tissues, tuck the chest skin out from the insert and remove from the ribs. If liquid has been introduced please take extra care during removal.



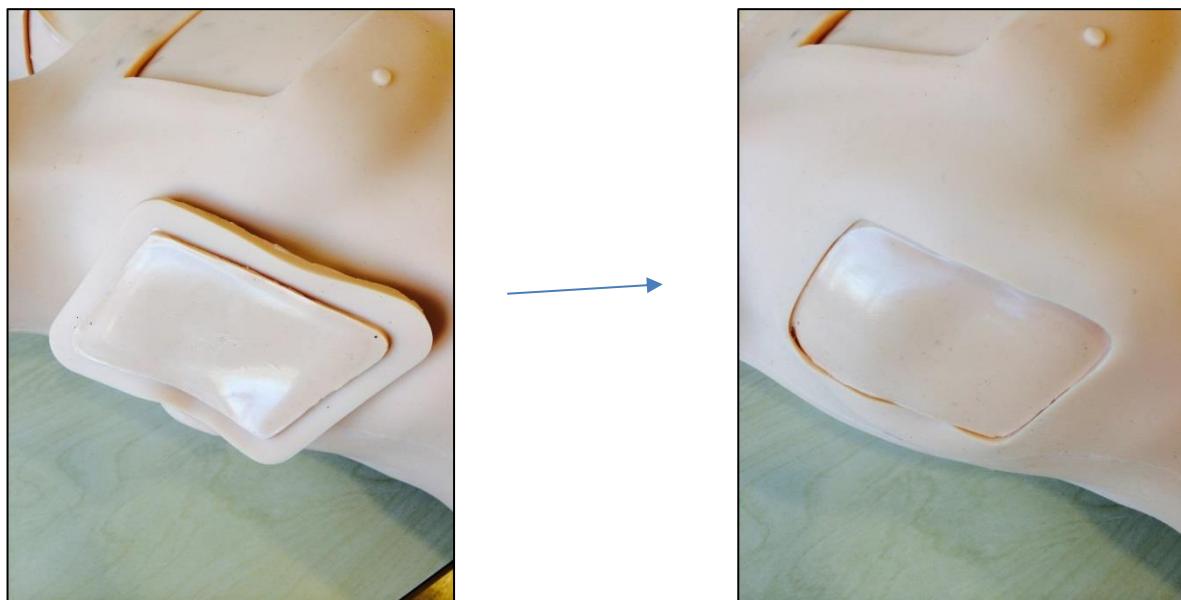
- Dispose of the tissue insert safely
- If liquid has been used to illustrate haemothorax dry the internal structure to ensure there has been no leakages.
- Handle a new tissue set, inserts are labelled L for left and R for right for easy separation. Align the set with the slotted compartment of the ribs.
- The ribs are designed so that the inserts slide into the slotted compartment with ease.



- If liquid is used to illustrate haemothorax then remove the red sealing cap and insert the desired fluid (again we recommend water to avoid stains). Fill the cavity to the desired level and tighten the cap. The part is now ready for insertion.



- A small amount of lubrication can be added to reduce the friction upon entry. The insert should fit into position with a little force.
- Ensure that again the insert is parallel and aligned with the outer skin and this can be done by running your finger around its circumference. The insert is now ready for use.



TruCorp provide the following spare parts to facilitate haemothorax training

on the Truman Trauma. These can be ordered using the following codes;

- **CD3000 Chest Drain Inserts**- three layer, set of two
- **CD3001 Chest Drain Inserts**- one layer, set of two

Cricothyroidotomy and Tracheostomy

1. Each model shipped will be able to begin a Cricothyroidotomy and Tracheostomy procedure immediately but please ensure that the Larynx membrane inserts are located correctly on the larynx and that the larynx is aligned on the airway correctly. If you are using the model for bag mask ventilation or tracheal intubation and need a visual chest inflation please cover the pre-cut holes with the airway sealing tape (as seen below). Also ensure that the skin is attached to all the velcro points to enable a fully functioning product.



2. A new Larynx membrane insert can be used for each trainee to provide a unique experience. The piece can be easily removed and replaced as can be seen in the images below. Placement of the Larynx: Ensure the Larynx is pushed down as far as it will go against the Sternum wall so it will be in the right position.
3. When practising airway management procedures cut a piece of sealing tape approximately 5-6cm and attached over the Crico and Traci hole in the airway. Please ensure that the airway is clean and dry before attaching the tape to ensure secure tape adhesion.



4. Each replaceable neck skin can be easily removed and a new piece attached. To ensure a completed fully functional neck skin, all velcro locations must be secured.

5. Using TruCorp's silicone lubricant ensure that the internal airway and the nasal passage is well lubricated.

6. Please ensure all airway devices are prepared to the manufacturers recommendations and instructions. Before insertion of the device generous amounts of lubricant should be used to cover the surfaces in contact with the AirSim airway, the Cricothyroid membrane and the tracheal rings.

TruCorp provide the following spare parts to facilitate cricothyroidotomy and tracheostomy use on the Truman Trauma. These can be ordered while purchasing using the following codes;

- **RS1005 Overlay neck skin attachments (pack of 5)**

- **TL200 Trauma Larynx** – Anatomical Larynx containing the Thyroid Cartilage, Cricothyroid membrane, Cricothyroid cartilage and tracheal rings. The Cricothyroid and tracheal location points are pre-cut.

- **LMS2050 Larynx Membrane Insert** (pack of 50) to resemble the cricoid membranes and tracheal cartilages. This part is required for use during cricothyroidotomy and tracheostomy procedures, and needs to be replaced after each incision.
- **ST1000 Sealing Tape-** Sealing tape used to cover the pre-cut cricothyroid and tracheostomy holes. Airway sealing tape needs to be used during airway management/ bag and mask techniques which require visible chest rise.
- **SFT1005 Subcutaneous Fat Tissue** (pack of 5)

Airway Management

The Truman Trauma features the anatomically correct and visually accurate AirSim airway. In addition to this the model also has an anatomically correct nasal passage showing the internal features.

The model can facilitate a wide variety of airway techniques to be demonstrated:

- Direct and video Laryngoscopy
- Oral and naso Pharyngeal intubation
- Fibre optic examination
- Bag mask ventilation with chest rise and fall
- Full use of supraglottic devices ranging in all sizes
- Single lung isolation techniques
- Palpable tracheal rings
- Needle and surgical Cricothyroidotomy
- Percutaneous tracheostomy

Due to the neck design it allows for a greater degree of flexion and extension giving the ability to fix the head into the ‘neutral’ or ‘sniffing’ position. With our anatomical jaw design, Jaw thrust training is also very effective on the model.

Successful ventilation is observed visually through the rise and fall of the chest.

As with all the TruCorp product range the tongue can be inflated, to demonstrate tongue oedema or anaphylactic reactions.

TruCorp recommend the following equipment sizes for optimal performance:

- 7.0-7.5 mm ID for nasal intubation
- 8.0-9.0 mm ID for oral intubation
- Size 3 - 5 for LMA laryngeal masks and IGels

(Similar respective sizes for other supraglottic devices)

PLEASE NOTE: Mouth the mouth resuscitation is NOT recommended on the Truman Trauma as the airway and lungs are not interchangeable or replaceable.

Care and Maintenance

Cleaning and Storage

- ✓ Store in clean, dry conditions away from heat and direct sunlight; avoid contact with metals, solvents, oils or greases and strong detergents.
- ✓ Thoroughly wash the Truman Trauma airway in warm water. Please ensure that the AirSim airway is cleaned after use. Please use warm soapy water or something similar until all visible foreign matter and residue is removed solution
- ✓ Clean the airway using a small soft bristle brush (approximately $\frac{1}{2}$ inch or 12.5mm in diameter). Gently insert the brush through the airway, taking care not to damage the material. Extra care must be taken when cleaning around the vocal cords.
- ✓ Carefully inspect the device to ensure that all visible foreign matter has been removed.
- ✓ The head and neck skin of the Truman Trauma is made from durable and very elastic polymer material. It can be cleaned using a lightly soaped, damp cloth. Please do not use any detergents or cleaning agents on the skin material.

During Chest drain procedures with the addition of fluid (blood like fluid) in the cavity, the model may experience some residual deposits. Again these can be cleaned using warm soapy water and dried using a cloth.

Please DO NOT USE any of the following when cleaning the AirSim product range:

- Germicides, disinfectants, or chemical agents such as glutaraldehyde (e.g. Cidex®),
- Ethylene oxide, phenol-based cleaners or iodine-containing cleaners

Such substances are absorbed by the Truman Trauma materials, resulting in exposure of the user to unnecessary risk and possible deterioration of the device.

Do not use a device that has been exposed to any of these substances.

Warranty

TruCorp warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of 1 year from the date of delivery.

This ensures that our customers receive maximum coverage on each product. If the unit should malfunction it must be returned to the factory for evaluation. Upon examination by TruCorp, if the unit is found to be defective it will be repaired or replaced at no charge. However this warranty is VOID, if the unit shows evidence of having been tampered with or shows evidence of having been damaged by excessive heat, the use of sharp instruments, misapplication, misuse or other operating conditions outside of TruCorp's control. Components which wear or are damaged by misuse are not warranted and will charged if repair has been approved.

Before returning any models please contact TruCorp. To avoid delays please ensure the following information is available

1. Returnee's name, address and phone number.
2. Model and serial numbers
3. Repair instructions with potential issues (with images if possible)
4. Apparatus/devices and number of uses on the model

Please direct all warranty and repair requests/enquires to



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2 Woodstock Link, Belfast, BT6 8DD

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